Maximising Export Returns: Consumer Preferences for Food Attributes in Developed and Developing Countries and Their Potential Impact

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Abstract

This study examined consumer attitudes towards attributes in food and beverages in China, India, Indonesia, Japan and the UK. The attributes are basic attributes such as price and quality, but also included food safety, health benefits, environmental and social attributes. The importance of factors affecting key attributes were examined in more detail. The study used a web-based survey with 1,000 middle and upper income consumers in each country. In addition, the potential economic impact of agricultural returns of different levels of premiums for food attributes in New Zealand were examined using the partial equilibrium Lincoln Trade and Environment Model (LTEM). This study found that consumers from developing countries valued food attributes more than the developed countries. Trade model projections showed an important impact on the agricultural sectors in New Zealand from the different levels of premiums for food attributes in selected overseas markets.

Keywords: New Zealand, Food Sustainability, Consumer Preferences, Cross Country Comparison, Trade modelling

JEL code: Agricultural and Natural Resource Economics: Agricultural Markets and Marketing – Cooperatives – Agribusiness Q13

1. Introduction

Exports of agricultural commodities are important to New Zealand, accounting for almost 60 per cent. Thus, for New Zealand, it is important to target markets to receive the greatest value for these exports. This value can be from taste and quality but also from other attributes. However, consumer preferences and values for different food attributes are likely to vary across different countries and commodities. Credence attributes are qualities believed by a consumer to be present in a product even though they cannot be identified, experienced and inspected by consumers before or after purchase (e.g., food safety, animal welfare, environmental protection and cultural authenticity). The values and consumers' attitudes and preferences towards credence attributes in food have been investigated in several studies worldwide (Guenther et al., 2015; Saunders, et al., 2013; 2011; Eurobarometer, 2009; Synovate, 2007). However, the literature has tended to be concentrated on consumer preferences in developed country markets such as the United Kingdom (UK), and few studies have been published on how consumers in emerging markets such as India, China and Indonesia evaluate different attributes of food products and how these compare.

Historically, New Zealand's main export market has been the UK, but in recent years, the focus of New Zealand exporters has changed: whereas previously almost all exports went to Europe, more are now going to Asian markets, particularly China. It is therefore important that exporters in New Zealand understand different cultures and preferences in these markets and how they differ from other markets in order to gain a premium for their exports.

This study is part of a wider research project entitled 'Maximising Export Returns (MER)', a three year project undertaken by the Agribusiness and Economics Research Unit (AERU) at Lincoln University, funded by the New Zealand Ministry for Business, Innovation and Employment (MBIE). This project aims to explore how export firms can capture price premiums by including credence attributes in products for overseas markets. It builds on previous work of the AERU which showed that overseas consumers (including those in the UK, China, and India) value different food attributes in food products (Saunders et al., 2013). The study particularly showed that food safety was the most important food attribute. Not surprisingly, India and China rated food safety certification as more important than respondents from the UK. However, more surprising was that in most cases Indian and Chinese consumers

valued other credence attributes more than in the UK, including organic status, environmental quality, animal welfare and recyclability. In a pilot study, further surveying built on this research firstly to include more countries such as Indonesia, Japan and Korea, and secondly to assess in more detail the importance of factors affecting key credence attributes in food products and the relationships between them. The pilot survey explored consumer attitudes towards seven attributes in food products and then selected four of them for more detailed analysis. These were animal welfare, environmental quality, health food and food safety. Survey participants were asked to rate the importance of a range of factors associated with these four attributes, which suggested some associations between them. Environmental quality, for example, was listed in the three developing countries as one of the top five factors associated with food safety (Saunders et al., 2015). Results from the pilot survey assisted the development of the scope of this study.

In this study, the selection of credence attributes is expanded to ten attributes in food and beverages that are important to consumers in five New Zealand exports markets. Then. six of these attributes were selected to assess the importance of factors associated with these key attributes in more detail. These six key attributes are *food safety, environmental condition, animal welfare and health, human health, social responsibility* and the *role of traditional cultures*.

Finally, the potential impact of varying levels of premiums for these attributes on New Zealand producer returns were examined using the partial equilibrium Lincoln Trade and Environment Model (LTEM).

The paper is structured as follows. The next section gives a brief history of New Zealand agricultural trade, particularly the rise in importance of emerging markets. Next, the literature on consumer preferences for food attributes, especially in the countries of interest, is reviewed. This is followed by the methodology of the study. Subsequent to this, survey results are presented and discussed, followed by the presentation of the potential impact of different levels of premiums for food attributes upon New Zealand's producer returns. Finally, brief conclusions are made.

2. History of New Zealand Trade and the Importance of Emerging Markets and Consumer Preferences

As mentioned before, historically the UK was New Zealand's greatest export market taking almost all exports until 1960. Since 2010, China has been New Zealand's main export market for agricultural commodities, facilitated through the signing of a Free Trade Agreement between both countries in 2008. In 2016 (year ended June), the export value of New Zealand's agricultural exports to China was valued at NZ$5.1 billion, a 13 per cent increase from the previous year (Statistics NZ, 2016). In contrast, New Zealand's agricultural exports to India have fluctuated. However, in 2010 India started negotiations towards a Free Trade Agreement with New Zealand, which has the potential for India to become an important export market (MFAT, 2013). While other Asian markets like Japan and Korea are already well-established trading partners for New Zealand, countries like Indonesia have some trade with New Zealand but have been identified as a potential growth market for the future. In particular, New Zealand's trade relationship with Indonesia has been given impetus by the Association of Southeast Asian Nations (ASEAN) Australia and New Zealand Free Trade Agreement (AANZFTA), of which Indonesia became a member in January 2012 (MFAT, 2014).

With growing trade into emerging markets in Asia, it is important that exporters in New Zealand understand consumer attitudes towards food and beverages in these markets. There is some literature on consumer preferences in these markets of interest but this varies, and there are only a few studies which compare across countries. For China, studies have shown that food safety is the most important credence attribute for consumers (Saunders et al., 2013; Zheng et al., 2013). Concerns for food safety may have increased since the occurrence of national and international food safety incidents, such as the Fonterra botulism scare in 2013 or the 2008 melamine scare in infant formula. The Chinese government has introduced a number of food safety assurance schemes, including a system of food labels. However, many consumers have limited trust, as well as limited recognition and understanding of the authenticity of these labels (Sun & Collins, 2012). In China, "safe food" is also related to the idea of "green food", with a study finding that consumers associate organics with being safer and healthier because of the lack of pesticides and other residues in food. It is therefore argued that the high interest in organic products is often driven by concerns for health rather than concerns for the environment (Thøgersen & Zhou, 2010).

Food safety is also a key attribute in food for Indian consumers. However, there are only a few studies that have quantified this. Saunders et al. (2013) showed that Indian consumers were willing to pay over 70 per cent more for food safety certified dairy and lamb products from New Zealand. Another study conducted by Birol et al. (2009) showed that Indian consumers who were exposed to information on "food safety certified" labelled grapes were more likely to purchase them than those who did not. Some studies have also shown that there is a growing number of Indian consumers who show a preference for environmental attributes associated with food products (Ishaswini & Datta, 2011; Mahapatra, 2013). In particular, eco-labelling and eco-friendly packaging has been shown to affect the purchasing decisions of urban middle class Indians (Vernekar & Wadhwa, 2011). Similar to China, a study has found that Indian consumers regard organics as a healthier alternative to conventionally produced food due to the lack of pesticide residues rather than environmental concerns (Chakrabarti, 2010; Kumar & Ali, 2011; Finzer et al., 2013)

Similarly, food safety is an important attribute in food for UK consumers (The Consumer Council, 2013), and this has grown in importance after food safety scares such as the 2013 Horsemeat adulteration scandal and the 2011 German sprouts E. coli outbreak (EFSA, 2012). UK consumers show a preference for local food, which is often associated with other attributes, including freshness, support for local producers, environmental concerns, better taste, safety, quality and gourmet status (Edward-Jones et al., 2008; Loureiro & Umberger, 2007). Other credence attributes that influence purchase decisions of UK consumers including labelling as organic. Similar to China and India, the interest in organics is for reasons other than concern for the environment, such as health (no pesticide use) and as an extension of a healthy lifestyle (Garcia et al., 2010). UK consumers are concerned about animal welfare in food production, with studies showing consumers would be willing to pay extra for products where production followed animal welfare standards (Ellis et al., 2009; Napolitano et al., 2007; Nocella et al., 2010). Some studies found other attributes are important to UK consumers. These include ethical production such as Fair Trade and carbon labelling (Nandonde, 2012; Guenther et. al., 2012; Gadema & Oglethorpe, 2011).

Several studies have assessed Japanese consumers' attitudes towards credence attributes in food. For food safety, Haydon et al. (2013) showed that Japanese consumers perceived locally-produced pork safer than imported pork. Kim (2008) found a food product's country of origin was a key determinant on consumer perception of food risk in Japan. There is some evidence

that Japanese consumers value environmental attributes in food. For example, Uchida et al. (2014) showed that Japanese consumers had a higher willingness-to-pay for seafood products labelled for improved environmental quality; and Motoshita et al. (2015) found that consumers in Japan indicated that they would adjust their purchase behaviour when given information about how their food choice affects carbon dioxide emissions. A few studies have examined Japanese attitudes to animal welfare in production, with consumers perceiving that locally-produced pork has higher animal welfare credentials than imported products (Haydon et al., 2013). Previous studies have shown that Japan is one of the world's largest markets for functional foods (Kaur & Das, 2012), with nearly 970 FOSHU-certified[1] products available on the domestic market in 2011 (Shimizu, 2012).

Only a few studies have assessed consumer preferences for credence attributes in Indonesia, and even fewer with the in-depth analysis relative to those of the UK, the EU, China, India and Japan. Some inferences can be made with the information that does exist. Some studies suggest that consumer demand for environmental and ethical attributes in food products exists and may be increasing in the Indonesian market (Wulandariet al., 2012). There is particular demand for organic products as part of an increasing interest in healthy lifestyles (Kurnia et al., 2012; Hermawan & Yusran, 2013).

To summarise, the reviewed studies indicate that credence attributes in food products are relevant to consumers in overseas markets; however, there is still little known about consumers' attitudes and preferences for credence attributes of food products in some emerging markets in Asia and also comparisons between countries.

3. Method

The method included a structured and self-administered survey. Five surveys were conducted in April 2015. The surveys involved two developed countries (Japan and the UK) and three developing countries (China, India and Indonesia). The survey was administered through Qualtrics™, a web-based survey system, and had a sample size of 1,000 consumers in each country.

[1] Food for Specific Health Uses (FOSHU) is the Japanese national standard for functional food certification.

The sampling strategy for the surveys involved the recruiting of participants from an online panel database of consumers. Each survey was stratified by household income distribution. The original survey was in English. For the Chinese, Japanese and Indonesian survey, the questionnaire was translated into the respective language by a professional translation service. Survey respondents were screened out by income, if they were not going grocery shopping at least once a month and if they did not know New Zealand as a country. In particular, the screen by income was used to target the upper and middle class particularly in the developing countries.

The survey was constructed to assess consumers' attitudes and preferences towards a number of attributes of food and beverages. These attributes included basic food attributes, such as quality, price, food safety, and nutritional value, but also social and environmental attributes, such as animal welfare and health, traditional cultures, human health enhancing foods, social responsibility and environmental condition. This was followed by a more detailed assessment of the importance of factors associated with six key attributes in food and beverages. The attributes were *food safety, environmental condition, animal health and welfare, health enhancing foods, social responsibility,* and *traditional cultures*. The survey also included a choice experiment to assess consumers' willingness-to-pay (WTP) for certain food attributes in dairy products, meat products, fruit and vegetables, and wine. The detailed WTP results of the choice experiment are not discussed in this paper, however these were used to assess the impacts of price premiums on New Zealand producer returns using the Lincoln Trade and Environment Model (LTEM).

The LTEM is a multi-country, multi-commodity partial equilibrium (PE) model of international trade (see Table 1; Cagatay & Saunders. 2003; 2004; Saunders et al., 2006). The model focuses on the agricultural sector and was specifically modified to focus on New Zealand, its main trading partners and their policies. The LTEM is used to quantify the price, supply, demand and net trade effects of trade and domestic agricultural support policies. The model is used to derive the long-term policy impact in a comparative static fashion. The included products are treated as homogenous and therefore perfectly substitutable in international markets. It is a non-spatial model in which the framework derives the net trade of each region, however, the supply and demand shares of countries in trade can also be traced down. It allows the application of various domestic and border policies explicitly such as

production quotas, set-aside policies, input and/or output related producer subsidies/taxes, consumer subsides/taxes, minimum prices, import tariffs and export subsidies. The economic welfare implications of policy changes are also calculated in the LTEM framework by using the producer and consumer surplus measures.

The LTEM framework includes 23 commodities and 23 countries. These are presented in Appendix. The dairy sector is modelled as five commodities. Raw milk is defined as the farm gate product and then is allocated to either the liquid milk, butter, cheese, whole milk powder or skim milk powder markets depending upon their relative prices subject to physical constraints. The meat sector is disaggregated into sheepmeat, beef, and pig meat in the current version of LTEM. Six crop products (wheat, maize, rice, sugar, coarse grains, oilseeds, oil meals, oil, apples and kiwifruit) as well as the poultry sector (poultry meat and eggs) and wool are also explicitly modelled in LTEM framework.

Table 1

Modelling Specifications of the LTEM

Model	LTEM: Lincoln Trade and Environment Model
Modelling Approach	Partial equilibrium
Temporal Properties	Comparative static and can also provide short term dynamics (via sequential simulation)
Solution Type	Non-spatial, net global trade
Solution Algorithm	Newton's global algorithm
Parameters	Synthetic
Commodity Coverage	23 (see Appendix 1, Table A.1)
Country Coverage	22 plus Rest of the World (see Appendix 1, Table A.2)
Behavioural Equations (per commodity and country)	Domestic supply - feed - food - processing Domestic demand Stock variation Producer price Consumer price Trade
Economic Identity	Net trade
Approached used to incorporate price differential	Preference changes

4. Results and Discussion

This section reports on results from the surveys conducted in China, India, Indonesia, Japan and the UK. In addition, modelling results of the potential impact of varying levels of premiums for credence attributes on New Zealand are described.

4.1 Consumer Preferences for Credence Attributes in Food and Beverages across Countries

Based on a five-point Likert scale varying from very important to not important at all, participants were asked to rate the importance of ten key attributes when shopping for food and beverages. These were *quality*, *price*, *animal health*, *animal welfare*, *environmental condition*, *health enhancing foods*, *food safety*, *social responsibility*, *nutritional value*, and *traditional cultures*. Figure 1 shows the percentage of replies in each country that responded important or very important to those ten attributes.

Figure 1

Importance of Attributes in Food Products and Beverages (in per cent)

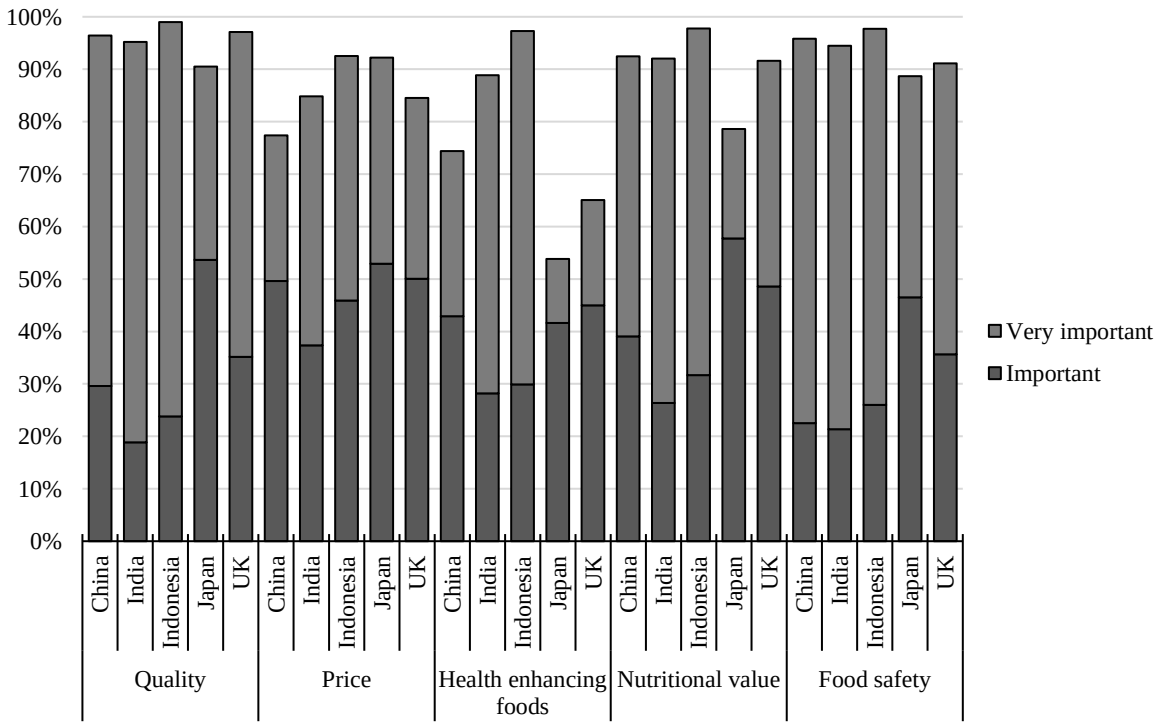
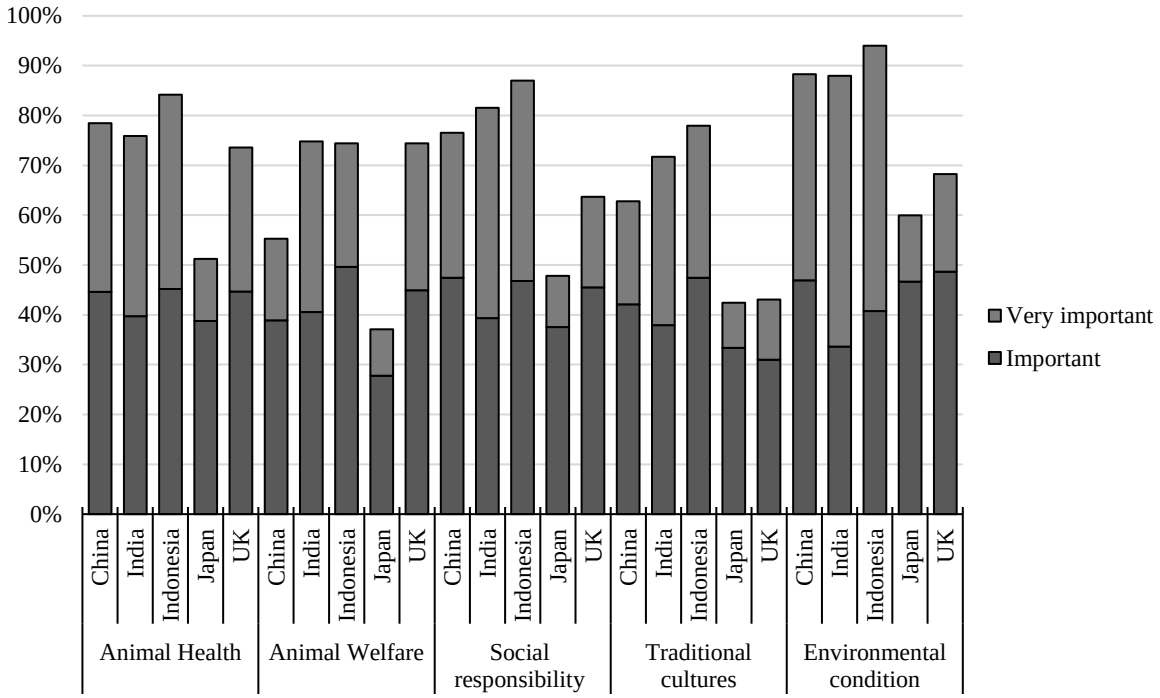


Figure 1 continued

Importance of Attributes in Food Products and Beverages (in per cent)



It is not surprising that most attributes were considered important or very important. As shown in Figure 1, *quality* was the most important of the ten attributes, with a higher percentage of respondents from developing countries compared to developed countries stating this was very important.

Food safety was the second most important of the ten attributes in all countries, with an average of 94 per cent of respondents across all countries indicating *food safety* was either very important or important when food shopping for food and beverages. This was highest in Indonesia at 98 per cent and lowest in Japan at 89 per cent. *Nutritional value* was the third most important of the ten attributes in all countries. It was particularly important to Indonesian participants, with 98 per cent indicating this was important and very important.

Environmental condition was considered important and very important across all markets, with the highest percentage received by respondents in Indonesia (94 per cent), followed by China and India at 88 per cent, each, then the UK (68 per cent) and Japan (60 per cent). *Animal health* was considered more important by respondents across all countries than *animal welfare*.

For both attributes, Indonesian respondents indicated the highest importance and Japanese the lowest.

The attribute of *social responsibility* when shopping for food and beverages was of less importance to respondents across all countries; and of all the attributes, *traditional cultures* when shopping for food and beverages was the least important, particularly among Japanese respondents, of whom only 9 per cent rated the attribute as very important.

Overall, all attributes were rated higher in importance by respondents in developing countries than in developed countries. This is in line with a previous study by Saunders et al. where Indian and Chinese consumers valued credence attributes in food products more than consumers in the UK.

4.2 Importance of factors associated with key attributes in food and beverages supply

In the next set of questions, participants were asked to rate on a five-point Likert scale, varying from very important to not important at all, the importance of a set of factors that consumers associate the key attribute with. The key attributes were selected from a pilot study (Saunders et al., 2015); these were *food safety, environmental condition, animal welfare and health, human health, social responsibility* and *the role of traditional cultures.*

Results showed that almost consistently, the developing countries considered all factors to be more important than the developed countries. For food safety, participants from all surveyed countries rated *freshness, hygiene standards* and *labelling of "use by date"* as the most important factors associated with this attribute. Cross-country comparisons showed that for Chinese participants, *hygiene standards* associated with food safety were rated the most important while Indonesian and Indian participants indicated the *labelling of a product's "use by date"* to be the most important factor associated with food safety. For Japanese and UK participants, *freshness* was the most important factor that they associate food safety with. *Animal welfare* as a factor related to food safety was the least important across all countries, except in the UK, where *GM-free food* was the least important factor related to food safety.

The survey also asked participants to consider the importance of factors as they relate to environmental condition in food and beverages supply. Almost consistently, the developing countries considered all factors to be more important to environmental condition than the developed countries, with the most important factors being *water and air quality* and *recycling*. These results were consistent with findings from previous research (Saunders et al., 2013; 2015). While Indian, Indonesian and Chinese respondents indicated that *organic production* is an important factor related to environmental condition, Japanese respondents showed that *recycling* was an important factor for this attribute. The factor of *protecting endangered species* in relation to environmental condition in the supply chain was particularly important to respondents from the UK and Indonesia. *Protecting wetlands* in association with environmental condition in the supply chain was among the least important factors across all countries.

When asked about the importance of factors related to animal welfare and health, participants in all markets considered *free of disease, good quality of life* and *animals are well-fed* as the most important factors. In contrast, the least important factors related to this attribute were *free range* and the existence of a *welfare veterinary plan*. While respondents from the developing countries rated most of the factors higher in importance than respondents from the developed countries, results showed that respondents from the UK placed higher importance on the factors *free of disease, no cruelty* and *humane slaughter* than respondents from the other countries. For Chinese participants, *free of disease* and *mainly pasture fed* were important factors in relation to animal welfare and health, while Indians placed a high importance on *natural conditions*. Japanese participants reported high importance for the factors *free of disease* and *animals are well-fed animals*.

With regards to the importance of factors related to health-enhancing foods, results were more varied. Across all countries, *heart and cholesterol health*, *digestive health*, and *child health* were the most important factors. While Chinese participants placed highest importance on the factors of *digestive health, immune system* and *baby health*, Indian participants rated *child health, baby health* and the *immune system* highly important. Indonesian participants rated *heart and cholesterol health, child health* and *digestive health* as very important. Japanese participants reported *bone health, digestive health,* and *heart and cholesterol health* were important factors in relation to health-enhancing foods, while their fellow UK participants rated *heart and cholesterol health, digestive health* and *child health* as most important. *Mobility* as a factor related to health-enhancing foods was among the least important factors across all

countries. *Weight management* was low in importance for consumers from the developing countries while *energy and endurance* was low in importance for consumers from the developed countries.

When asked about the importance of factors related to social responsibility, participants from all countries rated the factors of *workplace safety*, *good working conditions*, and *fair wages* as the most important in relation to social responsibility in food and beverages supply. Country-specific consumer preferences showed that for Chinese, Indonesian and Japanese participants, the factor *workplace safety* was seen as the most important, while Indian participants indicated *good working conditions* was the most important factor. UK participants indicated that *no child labour* was the most important factor in relation to social responsibility. *Freedom to join a trade union* as a factor related to social responsibility in the supply chain was rated lowest in importance in the developing countries, while *investment of profits in community facilities* was rated lowest in importance in the developed countries.

Finally, the survey asked participants to indicate the importance of several factors when considering the role of traditional cultures in food and beverages supply. Preferences for factors associated with this attribute were very similar across all countries, with participants rating the factors of *care for future generations*, *equity and fairness* and *connection with natural environment* as the most important factors. Interestingly, the factor of *indigenous rights* was rated relatively high by participants from the UK when compared to the other countries. *Family business* as a factor related to traditional cultures was rated lowest in importance across all countries (except Indonesia and the UK).

4.3 Impacts from different premiums for credence attributes in food across different countries

As mentioned above, the consumer survey included a choice experiment experiment to estimate willingness-to-pay for five credence attributes (health-enhancing benefits, environmental condition, animal welfare, food safety, social responsibility). The results from the choice experiment are shown in Table 2 for the case where an attribute level is raised from minimum to improved (Miller et al., 2016; Dalziel et al. 2016). The table shows the median percentage increase in willingness-to-pay, excluding outliers and negative results. These data varied from no premium up to 56 per cent (for food safety of meat products in India). The data

in Table 2 were then used in the LTEM, where they were applied to all imports in each of the five countries. This means the modelled premiums gained for each attribute are not captured solely by New Zealand exporters.

The model allows the dynamics between trading partners in the global market to be included in this analysis. From this exercise elements such as the size of the consumer base in each country, differing trade policies, and the extent of New Zealand exports into each market, are considered. The modelling exercise shows the potential returns to New Zealand producers from changes in consumer behaviour. This approach is valuable for assessing the potential impact for these WTP results as while a consumers in one nation may have high WTP for a particular attribute, if that country has high tariff barriers, or other issues for market access the resulting impact of obtaining that premium in-market may not be significant for New Zealand producers.

The results of the trade model analysis are shown in Table 3. It shows the change in producer returns from (the increased value of) exports where the WTP data from raising standards from minimum to improved. The modelling shows that overall the total impact of increasing the standard of any attribute from 'minimum' to 'improved' is positive for New Zealand producer returns. The highest total increases from these results was projected for raising 'animal welfare' with a 2.6 per cent increase in producer returns.

Table 2

Median willingness-to-pay for five credence attributes from minimum standards to improved standards for five countries and four agri-food products, in per cent, 2015

		Health Enhancing	Environmental Condition	Animal Welfare	Food Safety	Social Responsibility
China	Meat	8%	-	4%	2%	-
	Dairy	-	-	7%	3%	-
	Veggie	-	-	3%	-	-
	Wine	-	-	5%	2%	-
India	Meat	-	-	37%	56%	48%
	Dairy	-	-	22%	18%	-
	Veggie	-	-	-	16%	17%
	Wine	23%	-	-	-	-
Indonesia	Meat	12%	16%	13%	16%	-
	Dairy	-	16%	6%	17%	-
	Veggie	14%	-	5%	15%	19%
	Wine	-	-	-	32%	46%
Japan	Meat	-	-	11%	3%	-
	Dairy	-	30%	32%	8%	-
	Veggie	10%	22%	25%	12%	30%
	Wine	30%	-	12%	3%	-
UK	Meat	-	15%	7%	4%	14%
	Dairy	5%	11%	5%	4%	12%
	Veggie	10%	-	6%	4%	16%
	Wine	10%	3%	6%	1%	10%

Note: In the survey it was made clear that animal welfare includes biodiversity.

Table 3

Modelled increase in New Zealand producer returns for improved accreditation for five credence attributes, percentage change from baseline, in 2024

	Health Enhancing	Environmental Condition	Animal Welfare	Food Safety	Social Responsibility
Wheat	0.4%	0.4%	0.5%	0.4%	0.5%
Other Grains	0.7%	0.9%	1.1%	0.9%	1.1%
Maize	0.7%	0.9%	1.1%	0.9%	1.1%
Cereals	0.6%	0.7%	0.8%	0.7%	0.9%
Beef	2.3%	3.6%	5.0%	4.7%	5.6%
Pig Meat	4.8%	3.3%	4.2%	2.3%	3.0%
Sheep	4.9%	2.7%	9.3%	10.7%	9.3%
Poultry	2.9%	3.7%	5.8%	5.7%	6.0%
Raw Milk	0.3%	0.6%	0.8%	0.6%	0.6%
Butter	0.6%	1.3%	4.2%	3.4%	1.1%
Cheese	3.5%	7.3%	4.3%	3.1%	7.6%
WMP	0.0%	0.4%	2.3%	1.3%	-0.1%
SMP	2.1%	6.4%	5.6%	4.1%	3.3%
Apples	4.3%	0.6%	4.1%	2.1%	5.2%
Kiwifruit	2.4%	0.6%	4.4%	0.9%	3.3%
Wine	15.3%	4.4%	10.2%	1.9%	15.3%
Total Agriculture	**1.1%**	**1.5%**	**2.6%**	**2.1%**	**2.1%**

Note: In the survey it was made clear that animal welfare includes biodiversity. Total Agriculture is the aggregate of all 23 modelled commodities, some of which are not presented individually. WMP = Whole Milk Powder; SMP = Skim Milk Powder

The impact on producer returns were positive with the exception of whole milk powder (WMP) which was zero for the 'health' scenario, and the 'social responsibility' scenario. These are due to the increases in WTP for 'health' and 'social responsibility' in dairy being concentrated in the EU, a net exporter of WMP, rather than in key dairy importing countries for those attributes. The largest increases in percentage terms were projected for returns from wine which increased more than 15 per cent with 'health' and 'social responsibility', and over 10 per cent increased returns were projected under the 'animal welfare/bio-diversity' scenario.

The results of this modelling exercise indicate that if New Zealand agri-food products were able to capture price premiums in its key export markets, returns could be increased depending on the commodity and targeted attribute.

Cheese and sheepmeat also have the potential for large increases in producer returns with increases over seven percent for cheese with the 'environment' and 'social responsibility' attributes, and increases over nine percent for sheepmeat with the 'animal welfare/bio-diversity', 'food safety' and 'social responsibility' attributes.

5. Conclusion

Several studies have examined consumer attitudes and preferences towards different food attributes across countries. However, there are only a few studies that have assessed consumer attitudes towards basic food attributes and the product's environmental and social performance in emerging markets in Asia and cross-country comparisons. These emerging markets are gaining in importance for New Zealand; therefore, information on consumers' attitudes towards food attributes in these markets and how they differ from other markets is important information for New Zealand producers and exporters.

This study included a survey with a sample size of 1,000 consumers in two developed countries (UK and Japan) and three developing countries (India, China, Indonesia) to assess their attitudes towards credence attributes in food and beverages products.

Overall, this study found that credence attributes in food and beverages are important to consumers in China, India, Indonesia, Japan and the UK. In many cases, developing countries valued attributes more than developed countries. However, the relationship between the attributes and important factors that consumers associate them with showed differences across the markets with participants from the developing countries tending to rate these more important than their counterparts from the developed countries.

In order to assess the potential impact of different premiums for food attributes on producer returns in New Zealand, several scenarios were developed with varying levels of premiums for food attributes in three developing countries (India, China, Indonesia) and six developed

countries (Australia, Canada, Europe Union (28), Korea, Japan and the United States of America). The results of this modelling exercise indicate that if New Zealand agri-food products were able to capture price premiums in these key export markets, returns could increase by up to 15 per cent, depending on the targeted commodity and attribute. This result is under the assumption that New Zealand isn't the sole exporting country gaining price premiums in-market.

To conclude, consumer preferences and attitudes for attributes in food and beverages differ across countries. However, these can have a positive impact on producer returns in New Zealand. Future research includes assessing the impacts of any potential changes in market access for New Zealand into overseas markets through for example the New Zealand - EU Free Trade Agreement, Brexit and/ or the TPPA.

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Appendix

Table A.1

LTEM Commodity coverage

Wheat	Oilseed meals	Poultry	Liquid milk
Maize	Vegetable oils	Eggs	Apples
Other grains	Beef and veal	Butter	Kiwifruit
Rice	Pork	Cheese	Grapes
Sugar	Sheep meat	Whole milk powder	Wine
Oilseeds	Wool	Skim milk powder	

Table A.2

Countries in the LTEM

Argentina	European Union (28)	New Zealand	Switzerland
Australia	India	Norway	Turkey
Brazil	Indonesia	Paraguay	United States
Canada	Japan	Russia	Uruguay
Chile	Republic of Korea	Singapore	Rest-of-World
China	Mexico	South Africa	